Trade in services : How does it work ?

Isabelle Rabaud

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(very preliminary version)

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Summary

While services represent nearly 70 % of value added in all OECD countries, only a fifth of trade in goods and services is due to cross-border supply of services. Then internationalisation of services occurs by commercial presence of firms in host countries, its impact on white collar employment is limited and only unskilled workers incur falls in wage. As for temporary movement of people, Mode 4 is very difficult to measure either by trade or migration statistics. In the paper we show that the divergence between the preponderance of services in national activities and its weakness in international transactions is due to the importance of non tradeable industries, for which the degree is week and contrasts with activities implied in international competition.

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* University of Orléans, LEO : isabelle.rabaud@univ-orleans.fr.

1. Introduction

Services have, since a long time been defined as getting-together all non extracted, non agricultural and non manufacturing activities. Thus presented as a negative list, services gather heterogeneous industries with few similarities.

From an historical point of view, classics following Adam Smith assimilated services as unproductive labour as opposed to goods considered as productive labour. This perception persists nowadays. Thus, when elaborating the definition of services for the new System of National Account (SNA93), Hill considered software as the only service able to increase the fixed stock of assets. No other immaterial immobilisation, such as goodwill, publicity campaigns, licenses or training, is integrated in gross fixed assets formation. In 1999, Hill[1] presented a taxonomy of products and distinguished between goods, intangibles goods and services. Goods possess two characteristics that services do not hold:

- the producer is owner of all the products used and fabricated during production process,
- use or distribution of a good by the producer is a separate operation from production.

Most goods are material. But there exist other entities possessing all characteristics of goods and produced by people or enterprises engaged in creative and innovating activities such as literature, scientist work, engineering, artistic creation or entertainment. For Hill (1999), "*the original intangibles consist in additions to knowledge and in new information of all types and new creations of artistic or literature nature*". These originals exist independently from the creators and from the way they are registered. They have no spatial coordinates and belong to ideas and information. Property rights on originals, so-called intellectual property rights, can be defined. These products are immaterial or intangibles goods, according to Hill (1999). Once an original is produced, it can be used during a long period of time on a copy form. This author adds that "*services are heterogeneous by essence, but not so heterogeneous that they include all intangible goods*". He pleads for a trichotomy: goods, intangible goods and services. It is true that, a service cannot be stocked. It is not possible to define property rights on a service and to transfer them. In practice, one cannot produce a service without consent, cooperation, and more hopefully, active participation of buyers: services are not entities separable from the units that use or consume them. This property leads to the impossibility to produce a service in a country and to sell it in another.

Thus, according to Hill (1977 and 1999), only services delivered directly from a domestic supplier to a foreign user correspond to traditional cross-border trade, imposing a major constraint on international transactions in services. This particularity of services has been taken into account by trade negotiators when defining modes of internationalisation selected in the GATS (General Agreement on Trade in Services) signed in Marrakech in 1994[2]. Trade negotiators held a wild vision of international trade in services, gathering all transactions of knowledge and know-how from a resident of a country to a resident of another country, where ever the operation is located. The

[1] Peter Hill has been consultant for the UNO (United Nations Organisation) on the question of defining services during the redaction of the new System of National Accounts (SNA93).

[2] International trade in services was first mentioned by officials in 1974 in the *Trade Act* established by the American Congress for Tokyo Round of trade negotiations. Finally, only prohibition of subvention to services linked to merchandise trade was included in the final agreement. American firms of services, willing suppression of barriers to trade in services, lobbied in order to include this new topic on the agenda of the Uruguay Round of trade negotiations, opened in 1986 (Rabaud, 1995).

importance of a personal and direct contact between the supplier and the user leads negotiators to retain four modes of internationalisation of services, the so-called "four mode of trade in services":

1 - usual cross-border supply, *"applies when suppliers of services in one country supply services to consumers in another country without either supplier or consumer moving into the territory of the other"* (MSITS, 2002, p. 1). Services are supplied either by means of telecommunication (phone, fax, television, internet), either by sending documents, tapes, or CD-ROM, etc. Are concerned: transportation, communications services, insurance and financial services …

2 – consumption abroad "*describes the process by which a consumer resident in one country moves to another country to obtain a service*" (MSITS, 2002, p. 1). This mode 2 corresponds mainly to tourism, but also to language trips, studies and care abroad. The consumer moves abroad in order to get access to services in another country.

3 – commercial presence is involved when "*enterprises in an economy […] supply services internationally through the activities of their foreign affiliates abroad*" (MSITS, 2002, p. 1). This mode 3 implies the presence abroad of an affiliate or a subsidiary of a resident unity. It concerns mostly domestic sales of foreign affiliates, measured by statistics commonly called FATS (Foreign Affiliates Trade Statistics in Services). Medical services supplied by a hospital hold by foreign owners and financial services proposed by the subsidiary of a foreign bank are some examples.

4 – presence of natural persons "*describes the process by which an individual moves to the country of the consumer in order to provide a service, whether on his or her own behalf or on behalf of his or her employer*" (MSITS, 2002, p. 1). This mode 4 is characterised by the move on a non-permanent basis of individuals from another country to the country where the service is delivered (MSITS, 2002, p. 2). The mode includes computer and information services, temporary employment of workers in construction[3].

If modes 1 and 2 correspond to usual definition of international trade in goods, mode 3, which require the setting up of a plant or an agency in the country where the firm wants to sell, refers to a different logic. Actually, production is then realised abroad and correspond to contribution to GDP (Gross Domestic Product) and employment in the host country, and no more to that of the origin country of the firm. Regarding mode 4, as far as the movement remains of less than one year, the supplier stays resident of its origin country so that movement of physical persons differ from setting up a plant or an agency abroad; it can be considered as trade in an extended meaning.

Due to its particular nature, we will not mention Mode 2. After a quick picture of the importance of each mode in the world economy (section 2), implications on welfare of trading partners, structure of trade, and incomes of production factors of opening trade in Modes 3 and 4 will be briefly presented (section 3). Finally, we will stress the degree of openness and comparative advantage of OECD countries in cross-border trade in services (Mode 1).

[3] From MSITS, 2002 and WTO (2003).

2. Trade in services: How important is each mode?

Answering the wish of trade negotiators, international organisations, in particular OECD and WTO try to establish premises of an evaluation of the importance of internationalisation of services for each of the four modes defined by the GATS. A first rude estimation has been made by Karsenty from WTO (see table 1). According to this work, on a global point of view, commercial presence (mode 3) evaluated from FATS (Foreign Affiliates Trade Statistics, measuring activity of resident firms of foreign origin) would be twice greater than cross-border trade (mode 1), modality which, in turn, is twice greater than consumption abroad (mode 2). The temporary movement of natural person (mode 4), measured from "labour incomes" would be ten times lower than consumption abroad. In practice, FATS indicate the turnovers of "outward" FATS - i. e. of foreign affiliates of domestic multinational enterprises (MNE), data in which exist double accounts as this turnover includes exports made by foreign branches, exports which are already registered as cross-border supply in mode 1. The amount of exports made by firms controlled by enterprise of foreign origin should be subtracted from turnover of FATS. Moreover, it seems difficult to measure exactly services activities of branches, because "outward" FATS are established with reference to the sector of activity of the mother-firm resident and not relatively to the sector of activity of the foreign branch in the market of the host country.

Table 1: Purchases by mode of supply of GATS: a rude statistical proxy

Mode of supply	Proxy	Estimation (Billions US$)
1 – Cross-border supply	Balance of Payments: exports of commercial services (excluding travel)	1 000
2 – Consumption abroad	Balance of Payments: exports of travel	500
3 – Commercial presence	FATS: turnover	2 000
4 – Movement of natural persons	Balance of Payments: labour income	50

(Source: Presentation of Bettina Wistrom (OECD) to the task force "measure of trade in services" of the CNIS, taken from formation module of WTO, http://unstats.un.org/unsd/tradeserv)

Unfortunately, there exist no variable in production or trade statistics fitting to Mode 4 definition: "*the supply of a service by a service supplier of one Member, through the presence of natural person of a Member in the territory of any other Member*" (GATS Article I.2). Thus, statistics of trade in services reported in balance of payments refer to mode 1 or mode 2, not to mode 4. Although, some authors sometimes consider "computer and information services" and "other business services" (management consulting, law consulting, …) as belonging entirely to mode 4 (MSITS, 2002). This latter position poses problems as what is actually registered is the contract of supply of services between firms and, not the appointments of the workers temporary expatriated. In current account, "compensation of employees" signifies income of temporary workers employed in any economic activity and includes border workers. The range of activities covered is then larger than Mode 4. "Worker's remittances" correspond to current transfers of migrant workers employed in a foreign economy where they reside (i. e. they stay for a year or more in that country[4]). It concerns all economic sectors and includes permanent migrants (Guillochon and alii, 2005 and Jansen and Piermartini, 2005).

[4] This reference to a year differs from the definition of WTO Members of non-permanent movement of person ranging from three months to five years, see after.

Moreover, WTO Members' Mode 4 commitments do not make reference to any specific national visa scheme. As a consequence migration statistics do not provide any indicator of Mode 4 movements. The trouble is that the notion *"non permanent"* (temporary) is not specified in GATS and is interpreted differently by WTO (World Trade Organisation) Members, with employing period varying between three months and five years.

3. What is the impact of trade in services in Modes 3 and 4?

3.1. Should one be afraid of white collar services offshoring?

Since last US Presidency electoral campaign, the question of delocalisation of services activities (linked to commercial presence abroad, Mode 3) has raised fears of massive destruction of white collar jobs in United States, France and Germany. This fear has been alimented by consultancy studies such as Forrester's report, published in 2003, which pretends that, for the United States the number of services jobs "outsourced" to lower wages countries, such as India, will increase from 400 000 to 3,3 millions in 2015[5]. In the heart of the debate, Gregory Mankiw, in its "Economic Report of the President" transmitted to the Congress in February 2004 seems to ignore the problem, writing that *"The benefits from new forms of trade, such as in services, are no different from the benefits from traditional trade in goods. (…) When a good or service is produced at lower cost in another country, it makes sense to import it rather than to produce it domestically. This allows the United States to devote its resources to more productive purposes*" (Mankiw, 2004).

Who is right? In fact, the projections pretending that millions of "white collar" IT (information technology) jobs will be lost in the United States to offshore workers frequently use the peak of US economy as a base for their analysis of job losses, ignoring the business cycle, trend decline in manufacturing employment and dollar overvaluation at that time. In practice, there exist substitutions in occupations of white collar workers; while 70 000 computer programmers have lost their job from 1999 to 2003, 115 000 jobs of computer software engineers have been created in the United States. The *offshoring* (outsourcing abroad) has a positive impact: enhanced productivity gains. Thus, during 1995-2002, global integration in hardware industry accounted for perhaps 10 to 30 percent of the decline in IT hardware price and this decline in input prices has contributed to 0.3 percentage point of annual real GDP growth (Mann 2003 and 2004).

These debates give incentives to numerous economists to study the question of *offshoring* in services. Markusen (2005), in particular, proposed a portfolio of models to formalise white collar *offshoring* in services from North (industrialised countries) to South (developing countries). His simulations suggest a clear gain for world welfare and South as an all, but North may lose if it is a large area. This is a standard result in trade theory: the optimal tariff theory stands that a large country may prefer a Nash equilibrium in tariff rates to free trade with a small country. Regarding factor incomes, skilled workers is the relative (even sometimes absolute) gainer in both region, as activities that are not skilled intensive in the North are transferred in the South where they are. Results for unkilled labour and second-level white collar workers are mixed.

[5] Cited by Fontagné and Lorenzi , 2005, p. 157.

3.2. Trade in services according to mode 4 fosters merchandise trade

US is the exception to the rule of not providing indicators of Mode 4 movements in WTO commitments. They bind their commitments under mode 4 to the US H-1B visa provision covering the temporary employment of highly skilled foreign workers in US firms. The H-1B visa scheme permits foreign professionals to enter the United States to work in their field of expertise for as long as three years initially with extensions not exceeding three years. The scheme explicitly targets skilled workers as a "bachelor's degree or its equivalent" as a precondition for obtaining an H-1B visa. In opposition to the majority of commitments (70 %) by WTO Members it is not restricted to intra-corporate transferees. Reference to persons employed by an affiliate of a company with head-quarters in the person's home country links movement of natural persons (Mode 4) to commercial presence (Mode 3). Developing countries repeatedly demand more openness for Mode 4 flows of lower skilled persons and increased de-linkage of Mode 4 from commercial presence.

Trade in services through the temporary movement of natural persons affects host country economies through three channels. First, liberalisation of trade in services will lead to an increase in imports likely to lower domestic prices of the relevant services. Second, preferences of the host country will be affected, as temporary workers may wish to import consuming goods from their home country. Similarly, being back in their origin country, they may import goods they get used to in the host country. Third, temporary movement of person may affect transaction costs in two ways. On one hand, increasing trade in services via Mode 4 results in more efficient provision of services (better quality of services) and reduces transaction costs (in telecommunication for instance). On the other hand, migrants may start to build networks during their stay in the host country (information effect); due to their good knowledge of both the home and the host country, these business opportunities are likely to be related to trade. They help reducing demand and supply matching costs and network search costs. Finally, foreign workers facilitate a stronger enforcement of international contracts. Cross-border movement of people has a positive impact on exports and imports (Jansen and Piermartini, 2005).

Jansen and Piermartini (2005) suppose that the movement of natural persons in order to provide a service abroad increases bilateral demand of imports (preference effect) and boost trade because it reduces trade costs (more efficient provision of services, information and enforcement effect). Therefore, bilateral merchandise trade will tend to be higher between those countries where Mode 4 trade is more intensive. To capture this effect, they augment the standard gravity model explaining bilateral trade flows with an additional explanatory variable: the number of H-1B visas beneficiaries. Thus imports (exports) of US from (to) country j depends on US GDP in PPP (size market effect), US GDP per capita (quality of institutions and infrastructure), fives dummies for common borders, same language between trading partners, for island or landlocked partners, remoteness to the rest of the world (weighted average distance of each country from the rest of the world, where GDP are the weight).

As Mode 4 variable reflects one way of trading services, omitted variables from the regression might simultaneously affect Mode 4 and depend variable, creating an endogeneity problem. In order to avoid it, the authors estimate a system of equation estimating simultaneously bilateral merchandise

exports and imports and Mode 4 movements. Temporary movement of persons is estimated by the same model as merchandises trade, all explanatory variables are expected to have the same sign except for GDP per capita. Migration literature indicates that incentives to migrate are higher the higher the gap between domestic and host wages. Three additional variable are added to explain Mode 4: Age dependency (ratio of people younger than 15 and older than 64 to people between 15 and 64) measuring the separation cost of temporary migration, Schooling3 (ratio of people enrolled in tertiary education to population of corresponding age), Year2002 (a dummy variable capturing security restrictions in US after September 11th). Coefficients of Mode 4 range from 0.36 to 0.54 in the import regression. Regarding temporary movement of person, it is negatively related to GDP per capita in the origin country, its distance from US, whether it is a landlocked country and the age dependency ratio and positively related whether the official language is English. The results are robust to the introduction of permanent migration.

4. Degree of openness and comparative advantage in cross-border trade in services[6]

While more than half of value added of OECD comes from services industries (74.2 % in 2002), trade in services represents only 21.8 % of exports and 21.2 % of imports of goods and services (cross-border trade) of OECD's countries in 2002. Comparing these two data seems to indicate that services are hardly tradable by Mode 1.

Our empirical work focuses only on data reported in balance of payments statistics as trade in services. These data correspond mainly to mode 1, even though, for some activities, other modes of trade appear also. Therefore, tourism (travel services) will be excluded of our field of analysis. We follow a double purpose: ① evaluating the degree of international openness of each service activity and ② estimating comparative advantage of each country in the different services activities. But, some difficulties linked to statistics of trade in services have to be examined before study.

4.1. The inconsistencies of data of trade in services

As far as countries have progressively and at a different speed applied the new classification and recommendations mentioned by the fifth balance of payments Manual (BPM5) published in 1993 by the IMF, data availability differs significantly between nations (see table 1). This divergence is reinforced when North and South countries are simultaneously considered. For instance, export of "computer and information services" to United States and European Union (EU) declared by Indian authorities for 2002 are, respectively, superior of 80 % and 177 % to imports of "computer and information services" from India registered, respectively by United States and European Union for the same year. According to OECD (2004), a more extensive definition of "computer and information services" by India, including royalties and license fees and compensation of temporary workers, usually classified as labour income, could explain these gaps[7]. Thus, we have selected the joint OECD-Eurostat database of statistics of trade in services in which data should be the most homogenous as far as development gaps between the thirty member states of the OECD are les pronounced than between member countries of the IMF.

[6] This part is taken from Rabaud Isabelle (2005), *The Degree of Openness and Comparative Advantage in Services*, Sixth OECD-Eurostat Export Meeting on Trade-in-Services Statistics, OCDE, Paris, 14 septembre.
[7] OECD (2004), pp. 94-95.

The joint OECD-Eurostat database includes statistics for trade in services with the rest of the world of twenty nine member states.[8,9] Data are available from 1970 to 2002 in millions of US current dollars for eighty five headings of services and six levels of detail.
We have retained 1992 as starting point, because numerous countries begin to supply data this year and thus we are working on a decade: 1992-2002. In 1992, only four countries do no register data: Czech Republic, Denmark, Ireland and Slovakia. The twenty five countries[10] supplying statistics cover 94.8 % of credits and 93.8 % of debits in 2002 (see table 2).

Following the new nomenclature recommended in MSITS, the joint OECD-Eurostat database breaks trade in services into three main headings: transportation, travel and other services. The latter is then divided into 50 industries, with four levels of disaggregation, instead of nine activities in BPM5. The latter sub-division is now available in most OECD countries. "Computer and information services", the less complete item, is fulfilled by 25 countries in 2002. In opposite, few information is given at more detailed break downs. Thus, distinction between "postal and courier services" and "telecommunications services" on one hand, and between "computer services" and "information services" on the other hand is only available for about 15 countries in 2002. If the decomposition of "other business services" is better known, the number of countries compiling data differs sensibly according to industries. Thus, in 2002, 25 countries register "merchanting and other trade-related services", against only 13 for "services between affiliated enterprises, n. i. e." (see table 3).

Before calculating indicators, the database has to be corrected in order to insure that the sum of detailed items is equal to the corresponding aggregate. This correction is realised according to the method developed by the CEPII for CHELEM- BOP, the balance of payments database (see box 1).

4.2. The degree of openness

4.2.1. Difficulties of matching EBOPS with ISIC

The degree of internationalisation of an industry, for instance services, is measured by the rate of openness, the share of the half-sum of exports and imports of services in value added (or production) created in services. In addition to the joint OECD-Eurostat database of trade in services, STAN database of the OECD[11] is used to calculate this indicator. Matching EBOPS (Extended Balance of Payments Statistics) classification for trade in services with ISIC (International Standard Industrial Classification) for value added – or production – is then necessary. Such a work has been done in MSITS. Adding to difficulties of matching of the two classifications, the degree of sector break down differs between the databases. We retain the decomposition of two digits of ISIC. As shown in table 4, excluding travel (tourism), matching has been found only for six on the nine main headings of trade in services. Two other items

[8] Belgium and Luxembourg only declare separately their statistics of trade in services since 2002. We have chosen to take into account trade of BLEU (Belgium Luxembourg Economic Union) for which data are available for a longer period.
[9] The twenty nine countries of the joint OECD-Eurostat database of trade in services are : Australia, Austria, BLUE (Belgium Luxembourg Economic Union), Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, Turkey, United Kingdom and United States.
[10] In addition to the seventeen countries already quoted, the list of twenty five includes: Austria, BLEU, Finland, Iceland, Japan, Netherlands, Mexico and Sweden.
[11] The Database STructural ANalysis (STAN) of OECD uses the standard classification of activities for all OECD member countries. It includes annual measures of output, labour input, investment and international trade. STAN is primarily based on Member countries' annual national accounts by activity tables. This nomenclature is based on the international standard industrial classification (ISIC Rev. 3). It is compatible with the NACE Rev. 1 nomenclature used by the member states of the European Union.

"insurance services" and "financial services" could to be included together under the appellation "financial intermediation". At a more disaggregated level, both statistics of trade and value added are only available for eight activities included in "other services" on the twenty four of our decomposition: "communications services", financial intermediation ("insurance services" + "financial services"), "computer and information services", "other business services", "merchanting", "operational leasing services", "research and development", "personal, cultural and recreational services" (see table 4). Then the number of years during which data are available is reduced, because statistics in both industries are simultaneously needed. Thus, for instance, in financial intermediation, Finland supplies data for trade and value added only from 1992 to 1998, while statistics for Ireland are only available from 1998 to 2002 (see table 5).

Box 1: Corrections to the joint OECD-Eurostat database on trade in services

The joint OECD-Eurostat database on trade in services includes statistics of the thirty member states of the OECD with the rest of the world in millions of current dollars from 1970 to 2002 for 85 items of services with 6 subdivisions. Actually, few data are available prior to 1985 and items are barely served at a very detailed level. Otherwise, years when the data begin to become available differ sensibly between countries for a given activity and between items of services for a given country. Then, building coherent long term database necessary for economic study is a hard stuff.

From the joint OECD-Eurostat database, the divergences between detailed items and aggregated headings have been identified and corrected according to the method developed by the CEPII for the CHELEM-BOP database. Five causes of divergences between total trade in services and sum of their components have been identified:

- *1st case*: only the aggregate is available, none of the components is registered; the aggregate is allocated to a residual item chosen among its components (see table 3);

- *2nd case*: the gap between the aggregate and the sum of its components is negative for a credit, positive for a debit, reflecting a greater amount of the sum of elements: the aggregate is them recalculated as the sum of its components;

-*3rd and 4th case*: the gap is equal to one (or several) components which is (are) counted twice or the aggregate does not include one or several components; only the sum of components is relevant to measure the aggregate;

-*5th case*: the sum of components is smaller than the aggregate calculated and the difference is not identifiable; the gap is reallocated to the residual variable now defined as the sum of its initial value and of the gap observed (for more details, see Rabaud, 2004a and 2004b).

Information is not homogenous between countries. Thus, Turkey does not register value added in services. Moreover, Australia, Canada and United States provide data of value added in services only until 2001. This is also the case of Spain for some sector services subdivisions. The more the sector detail is precise, the less important is the number of countries supplying statistics. Of the nine main headings, "computer and information services" remains the activity for which statistics are the more rarely available: only 16 countries provide information for

trade and value added and seldom prior to 1992. In opposite, all countries give data for "other business services" and frequently before 1992. To a more detailed level, information is even less frequent. Thus, only 11 countries supply information on "research and development" (see table 5). Moreover, it is clearly impossible to build a partition, as, in a given industry, data available for trade are not necessary available for value added.
When considering sector degree of openness, analysis might be improved when considering production rather than value added. In fact, reporting trade to value added could drive to false conclusions, as far as intermediate consumptions are excluded. But, it happens that the sector and geographic coverage of data on production in services activities is even smaller than that of value added. For instance, when production is considered, in addition to Turkey, Ireland and Australia do not report data in services. Moreover, data are only available until 2001 for Canada, Slovakia, United Kingdom and United States, and until 2000 for Spain. If all reporting countries do provide data for "other business services" only 16 supply statistics of trade and production for "computer and information services". Denmark only registers data for "other business services", while information on financial intermediation for Ireland is only available for 2001 (see table 6).

4.2.2. Diverging geographical and sector degree of openness

The share of services in value added of OECD countries, in 2002, stand from 77.3 % in the United States to 59.0 % in Czech Republic. It is greater than two third in most of the countries except, in addition to Czech Republic, for Ireland (55.7 %), Korea (57.5 %) Norway (61.0 %), Slovakia (64.6 %), Canada (65.6 %), Hungary (66.1 %) and Poland (66.4 %). France is placed in the high group with 72.9 % of value added created in services in 2002 (see table 7).

Reporting the half-sum of exports and imports of services to production, the degree of openness is slightly reduced. For OECD countries, in 2002, it varies from 67.3 % for United States to 40.7 % for Korea. United Kingdom takes the second rank with 66.7 %, followed by Denmark (63.4 %), Belgium-Luxembourg exe quo with Switzerland (61.3 %) and Greece (61.2 %). France (58.8 %) is slightly less opened than the average of OCDE (62.5 %) (see table 8).

This dominance of services in the creation of wealth in national economies contrasts with the minor share of these activities in trade of goods and services. Greece, with a share of services in exports of goods and services greater than two tiers at 66.9 %, in 2002, due to the dominant role of tourism in foreign Greek trade, shows an exception. Small European countries or with a highly developed tourism sector stand in the first ranks: thus, Iceland, with 33.9 % of its exports devoted to services, precedes Spain at 33.2 %, Denmark at 32.8 % and Austria at 32.3 %. United Kingdom (31.7 %) and United States (29.6 %) have also a good rank, while France is in the average of OECD with 22.0 %. Mexico has the less developed trade in services with 7.3 %, while Japan (14.3 %) and Germany (14.7 %) are far away other G7 members, with shares smaller than that of CEECs (Central and Eastern European Countries): from 18.3 % for Hungary to 15.4 % for Czech Republic.

Small European countries greatly opened are in the first ranks in terms of share of imports of services in imports of goods and services, with 44.1 % for Ireland, 35.1 % for Iceland, 34.7 % for Denmark, 32.9 % for Austria and 31.7 % for Norway. The comparative disadvantage of Japan (26.3 %) and Germany (23.6 %) in services illustrates a relatively higher share of imports of services than exports. The opposite holds for United Kingdom (23.6 %), France (18.8 %) and United States (16.3 %). The weak openness of services in CEECs is confirmed from 16.3 % in Hungary to 12.4 % in Slovakia.

Small Northern European countries such as Belgium-Luxembourg, Netherlands and Finland (for "computer and information services" prior to 2002 and "operating leasing services") show the highest degree of openness. These countries are followed by some CEEC: Hungary and Slovakia. In contrast, due to its large internal market, United States stand in the last ranks for most services activities. United Kingdom appears in the middle, with the exception a high rank in financial intermediation (7.9 %). France stands also in a middle rank, but with bad performances in "computer and information services" (2.3 %) and "research and development" (4.2%).

The average degree of openness of OECD for total services establish at 15.3 % in 2002. "Research and development" appears as the most opened industry with 31.0 % in 2002. In fact, only the countries where this activity is already highly internationalised make declarations. Thus, in 2002, except for Slovakia (2.5 %), France (4.2 %) and Portugal (9.4 %), the degree of openness is greater than one tenth. Openness is also greater than that of total services in "computer and information services" with 18.3 % in 2002. This occurrence is explained by a high openness of small European countries: Belgium-Luxembourg (23.2 %), Spain (23.1 %), Greece (20.8 %), Hungary (14,2 %) and Netherlands (13.0 %). The slightly greater than average, openness in "operational leasing services" (15,6 %) is due to the positions of Hungary (28.1 %), Finland (21.3 %), but also of Korea (16.8 %) and Spain (15.4 %). Financial intermediation appears somewhat less opened than average (14.4 %), followed by "other business services" (12.9 %) and "communications services" (9.8 %). In the former, the high degree of openness of Belgium-Luxembourg, Mexico, Austria, Czech Republic, Norway, Switzerland and United Kingdom (superior to 8 %) contrasts with the weak openness of Italy, Iceland, New Zealand, United States, Japan, Korea and Finland (less than 2 %). In the latter, Belgium-Luxembourg, Netherlands and Iceland occupy the first ranks (openness superior to 7 %), while United States, Japan and Korea stand in the last ranks (openness inferior or equal to 2 %). Finally, "Personal, cultural and recreational services" show a much smaller degree of openness than other services industries (1.1 % in OCDE in 2002) in line with the non-competitive nature of most of its activities such as social services (education, medical assistance, …).

In summary:

- the degree of openness in services industries remains highest in small countries: Finland, BLEU, Austria and Netherlands,
- United Kingdom is systematically more opened than United States, penalised by the size of their internal market,
- "research and development" appears as the more opened sector with a rate superior to 20 % in most countries; "computer and information services", "operational leasing services" are also relatively opened; "communications services" and financial intermediation show a degree of openness slightly smaller; finally, in "personal, cultural and recreational services", the rate is rarely higher than 1 %, in line with the arbitrated nature of these activities.

4.3. Revealed comparative advantage and contribution to the balance of goods and services

One way of measuring sector distribution to competitiveness of a country is to calculate the indicator of contribution to balance. In its initial version, it is measured by reference to GDP, but, as far as trade in services concerns smaller amounts than trade in goods, it is possible to report this indicator to the total amount of trade in goods and services. In view to measure comparative advantage of total goods and services sold in a market, we calculate the indicator of contribution to balance with reference to the sum of trade in goods and services and not to current operations, presentation adopted in the CHELEM database of CEPII.

The indicator of comparative advantage is based of the balance of trade of a given product and takes into account the size of the market of each country. Thus, for country i and each product k, the share of this effective balance reported to the sum of trade in goods and services is first calculated, (in 0/00 %):

$$y_{ik} = 1\,000 * \frac{C_{ik} - D_{ik}}{C_{i.} + D_{i.}}$$

The weight of the industry in trade in goods and services has to be taken into account:

$$g_{ik} = \frac{C_{ik} + D_{ik}}{C_{i..} + D_{i..}}$$

It is then possible to define a theoretical balance of sector k, the balance which would be observed if surplus (deficit) of trade in goods and services of country i was distributed between the different industries in proportion of their respective weights:

$$z_{ik} = g_{ik} \,.\, y_{ik} = 1\,000 * \frac{C_{ik} + D_{ik}}{C_{i.} + D_{i.}} * \frac{C_{ik} - D_{ik}}{C_{i.} + D_{i}}$$

The own contribution of each sector is then obtained with the calculus of difference between the effective balance y_{ik} and the theoretical balance z_{ik} (see Mayer and Mucchielli, 2005):

$$f_{ik} = y_{ik} - g_{ik} \,.\, y_{ik} = 1\,000 * \frac{C_{ik} - D_{ik}}{C_{i..} + D_{i.}} - 1\,000 * \frac{C_{ik} - D_{ik}}{C_{i..} + D_{i.}} * \frac{C_{ik} + D_{ik}}{C_{i..} + D_{i..}}.$$

The amounts obtained differ for each country according to the weight of trade in services in foreign trade of goods and services. In order to ease comparaisons between countries, we have normed the results so that the sum of negative contributions are equal to -100 and those of positive contribution to +100 (see Jean et alii, 2004).

Revealed comparative advantages of a country in services are measured by the contribution to the balance of goods and services in each service industry. The indicator is reported to the sum of exports and imports of goods and services in OECD. Germany and Japan appear neatly specialised in goods and show a comparative disadvantage in services, in particular in travel. In the opposite, a high specialisation in “other services” is observed in United States and United Kingdom, mostly in “financial services” and “other business services”, but also in “royalties and license fees” for the former, while they have a comparative disadvantage in goods. Comparative advantage of France in “travel” and, to a lesser extent, in “other services”, is accompanied by an important comparative disadvantage in goods and transport. Comparative advantage of Ireland in « computer and information services » is associated with important comparative disadvantages in « royalties and license fees » and in « other business services ». Finally, Mexico is characterised by an important comparative disadvantage in insurance services (see tables 9 and 10).

Results are not modified if contribution to balance is reported to trade in services only, excluding goods (see table 11).

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Table 1 : Number of headings completed according to countries and years[a]

Countries	First year	Number of headings	Year of rise in middle 1990's	Number of headings	First year of greatest number	Number of headings
Australia	1970	*10*	1992	*37*	1999	*45*
Austria	1992	*12*	1995	*19*	2000	*21*
Belgium-Luxembourg	1991	*33*	1995	*45*	1999	*56*
Canada	1970	*19*	1995	*45*	1996	*47*
Czech Republic	1993	*19*	1997	*30*	2001	*62*
Denmark	1999	*3*			1999	*4*
Finlande	1992	*35*			1998	*45*
France	1985	*21*	1992	*34*	1998	*31*
Germany	1985	*21*			1993	*53*
Greece	1985	*2*	1993	*31*	2002	*48*
Hungary	1982	*4*	1995	*14*	1996	*19*
Iceland	1978	*2*	1995	*17*	1997	*21*
Ireland	1993	*2*	1998	*10*	2002	*37*
Italy	1985	*21*	1992	*43*	1999	*65*
Japan	1991	*20*			1996	*22*
Korea	1980	*9*	1992	*12*	1998	*14*
Mexico	1987	*6*	1996	15	1997	*23*
Netherlands	1992	*31*	1995	*38*	1997	*39*
New Zealand	1970	*3*	1992	*20*	2000	*22*
Norway	1981	*39*	1992	*60*	1996	*52*
Poland	1980	*4*	1996	*42*	2000	*51*
Portugal	1985	*20*	1993	*34*	1996	*58*
Slovakia	1994	*21*	1996	*28*	1998	*26*
Spain	1985	*22*	1992	*41*	1993	*53*
Sweden	1992	*29*	1995	*33*	1998	*26*
Switzerland	1986	*8*			1998	*8*
Turkey	1984	*6*	1995	*19*	1998	*19*
United Kingdom	1985	*17*	1996	*47*	1996	*46*
United States	1986	*43*	1996	*44*	2001	*48*

Source : Joint OECD-Eurostat database of international trade in services, calculs of the author

[a] Only including headings for which credits and debits are superior to zero in absolute value. Therefore, our results differ from those of International Organisation who do take into account all flows registered even when equal to zero.

Table 2: Share of each country in exports and imports of services of OECD in 2002

COUNTRY	Share in exports of services	Share in imports of services	Share in exports of other services	Share in imports of other services
Australia	1.4 %	1.5 %	0.8 %	1.1 %
Austria	2.8 %	2.9 %	1.5 %	1.5 %
Belgium-Luxembourg	4.2 %	3.8 %	5.5 %	4.6 %
Canada	2.9%	3.6 %	3.0 %	3.9 %
Czech Republic	0.6 %	0.5 %	0.4 %	0.7 %
Denmark	2.1 %	2,1 %	0.6 %	0.5 %
Finland	0.5 %	0.7 %	0.5 %	0.7 %
France	6.8 %	5.7 %	5.4 %	5.6 %
Germany	8.3 %	12.6 %	9.4 %	11.9 %
Greece	1.6 %	0.8 %	0.3 %	0.5 %
Hungary	0.6 %	0.6 %	0.6 %	0.8 %
Iceland	0.1 %	0.1 %	0.1 %	0.1 %
Ireland	2.2 %	3.4 %	3.6 %	6.2 %
Italy	4.7 %	5.3 %	3.7 %	5.9 %
Japan	5.2 %	9.0 %	5.9 %	8.9 %
Korea	2.2 %	3.0 %	1.5 %	2.8 %
Mexico	1.0 %	1.5 %	0.4 %	1.7 %
Netherlands	4.4 %	4.8 %	4.7 %	5.6 %
New Zealand	0.4%	0.4 %	0.2 %	0.3 %
Norway	1.5 %	1.4 %	1.0 %	1.1 %
Poland	0.8 %	0.8 %	0.4 %	0.7 %
Portugal	0.8 %	0.6 %	0.3 %	0.4 %
Slovakia	0.2 %	0.2 %	0.1 %	0.2 %
Spain	4.9 %	3.2 %	3.0 %	3.9 %
Sweden	1.9%	2.0 %	2.2 %	2.3 %
Switzerland	2.3 %	1.3 %	2.8 %	1.1 %
Turkey	1.1 %	0.5 %	0.5 %	0.4 %
United Kingdom	10.2 %	9.0 %	14.1 %	7.2 %
United States	24.3 %	19.0 %	27.4 %	19.4 %
OECD	**100.0 %**	**100.0 %**	**100.0 %**	**100.0 %**

Source : Joint OECD-Eurostat database of international trade in services, calculs of the author

Tableau 3 : Share of selected services in total exports and imports of services in 2002

CODE	LIBEL	Share in exportats*	Share in imports*
245	**A) Communications services**	**3.9 %**	**4.9 %**
246	1) Postal and courier services	0.4 %	0.7 %
247	2) Telecommunication services	2.6 %	3.1 %
249	**B) Construction services**	**3.6 %**	**3.0 %**
253	**C) Insurance services**	**7.7 %**	**6.2 %**
260	**D) Financial services**	**12.2 %**	**7.0 %**
262	**E) Computer and information services**	**6.4 %**	**4.7 %**
263	1) Computer services	4.7 %	2.8 %
264	2) Information services	0.9 %	0.4 %
266	**F) Royalties and license fees**	**12.4 %**	**13.3 %**
268	**G) Other business services**	**44.5 %**	**51.3 %**
269	1) Merchanting and other trade-related services	5.9 %	7.4 %
272	2) Operational leasing services	2.1 %	2.0 %
273	3) Miscellaneous business, professional and technical services	34.9 %	40.1 %
274	a) Legal, accounting, management consulting, and public relations	4.0 %	4.5 %
278	b) Advertising, market research, and public opinion polling	1.1 %	2.3 %
279	c) Research and development	2.2 %	1.4 %
280	d) Architectural, engineering, and other technical services	2.7 %	2.4 %
281	e) Agricultural, mining, and on-site processing services	0.3 %	0.5 %
284	f) Other business services	8.2 %	9.5 %
285	g) Services between affiliated enterprises, n.i.e.	7.1 %	7.0 %
287	**H) Personal, cultural, and recreational services**	**3.1 %**	**2.7 %**
291	**I) Government services, n.i.e.**	**5.8 %**	**6.4 %**
299	***Other services, n. i. e.***	***0.3 %***	***0.5 %***
981	**TOTAL : Other services, total *(sum 245-291)***	**100.0 %**	**100.0 %**

Source : Joint OECD-Eurostat database of international trade in services, calculs of the author

* Data have been corrected with the methode developed by the CEPII in order than aggregate "other services" be allways equal to the sum of its componants (see Rabaud, 2004b).

Table 4 : Simplified matching between EBOPS and ISIC

EBOPS	ISIC
205: Transportation	60-63: Transport and storage
236: Travel	55: Hotels and restaurants
245: Communications services	64: Post and telecommunications
253: Insurance services + 260: Financial services	65-67: Financial intermediation
262: Computer and information services	72: Computer and related activities
268: Other business services	70-74: Real estate, renting and business activities
269: Merchanting and other trade-related services	*50-52: Wholesale and retail trade; repairs*
272: Operational leasing services	*71: Renting of machinery and equipment*
279: Research and development	*73: Research and development*
287: Personal, cultural and recreational services	80: Education + 85: Health and social work + 90-93: Other comunity, social and personal services

Source: Inspired by MSITS (2002)

Table 5: Concomitant availability of sector data of trade in services and value added

Countries[1] / Industries	AUS	AUT	BLEU[2]	CAN	CHE	CZE	DEU	DNK	ESP	FIN	FRA	GBR	GRC	HUN	IRL
A) Communications services	92-01	92-02	91-02	81-01	98-02		91-02		85-02	92-02	85-02	85-02	95-02	95-02	
B) Financial intermediation[3]	85-01	92-02	91-02	86-01	90-02	93-02	91-02		85-02	92-98	85-02	96-02	95-02	95-02	98-02
C) Computer and information services		95-02	91-02				91-02		95-01	92-02	92-02	92-01	95-02	96-01	
D) Other business services	82-01	92-02	91-02	81-01	90-02	93-02	91-02	99-02	85-02	92-02	85-02	85-02	95-02	91-02	98-02
1) Merchanting and other trade-related services	92-01	92-02	91-02	81-01	90-02	93-02	91-02		85-02	92-02	85-02	85-02	95-02	95-02	98-02
2) Operational leasing services		92-01	91-02	81-01			91-02		95-01	92-02	92-02	92-01	95-02	95-02	
a) Research and development			95-01				91-02		95-01	92-02	91-02	96-01	95-02		
E) Personal, cultural, and recreational services	92-01	92-02	91-02	81-01	90-02	95-02	91-02		85-02	92-02	85-02	92-02	95-02	96-02	00-02
Business sector services [4]		95-02	91-02	90-01		95-02	91-02		92-02	92-98	92-02	96-02	98-02	96-02	01-02

Countries[1] / Industries	ISL	ITA	JPN	KOR	MEX	NLD	NOR	NZL	POL	PRT	SWE	SVK	TUR	USA
A) Communications services	90-02	85-02	91-02	80-02	97-02	92-02	81-02	98-01		85-02	92-02	94-02		86-01
B) Financial intermediation[3]	93-02	85-02	91-02	81-02		95-02	81-02	92-01	94-02	96-02	92-02	94-01	NO	86-01
C) Computer and information services	96-02	92-02				95-02	81-02			95-99	93-02	94-99		
D) Other business services	90-02	85-02	91-02	80-02	88-02	92-02	81-02	92-01	92-02	85-02	81-02	94-02		86-01
1) Merchanting and other trade-related services		85-02		80-02		92-02	81-02	92-01	99-02	85-02	81-02	94-02		96-01
2) Operational leasing services				90-02		92-02	81-02	99-01		95-99	95-02			
a) Research and development						92-02	81-02			95-99		94-99	VA	
E) Personal, cultural, and recreational services	95-02	85-02	91-02	80-02	94-02	95-02	81-02	92-01	93-02	85-02	93-02	96-02		86-01
Business sector services [4]	96-02	92-02	96-02	97-02		95-02	92-02	99-01		96-02	92-02	96-02		86-01

(Source : Calculus of the author from the joint OECD-Eurostat database of trade in services)

[1] ISO alphanumerical 3-code, on web site: http://unstats.un.org/unsd/methods/m49/m49alphaf.htm

[2] Belgium-Luxembourg Economic+B63 Union

[3] Insurance services and financial services

[4] Transportation, travel, communication services, construction services, insurance services, financial services, computer and information services, royalties and license fees and other business services

Table 6: Concomitant availability of sector data of trade in services and production

Countries[1] / Industries	AUS	AUT	BLEU[2]	CAN	CHE	CZE	DEU	DNK	ESP	FIN	FRA	GBR	GRC	HUN	IRL
A) Communications services		92-02	91-02	81-01	98-02		91-02		95-00	92-02	85-02	92-01	95-02	95-01	
B) Financial intermediation[3]	NO	92-02	91-02	86-01	98-02	93-02	91-02		95-00	92-98	85-02	96-01	95-02	95-02	NO
C) Computer and information services		95-02	91-02				91-02		95-00	92-02	85-02	92-01	95-02	96-01	
D) Other business services		92-02	91-02	81-01	90-02	93-02	91-02	99-02	95-00	92-02	92-02	89-01	95-02	91-02	
1) Merchanting and other trade-related services		92-02	91-02	81-01	90-02	93-02	91-02		95-00	92-02	85-02	95-01	95-02	95-02	
2) Operational leasing services		92-02	91-02	82-01			91-02		95-00	92-02	85-02	92-01	95-02	95-01	
a) Research and development	PROD		91-02				91-02		95-00	92-02	92-02	96-01	95-02		PROD
E) Personal, cultural, and recreational services		92-02	91-02	70-01	90-02	95-02	91-02		95-00	92-02	85-02	89-01	95-02	96-02	
Business sector services [4]		95-02	91-02	90-01		95-02	91-02		95-00	92-98	92-02	96-01	98-02	96-02	

Countries[1] / Industries	ISL	ITA	JPN	KOR	MEX	NLD	NOR	NZL	POL	PRT	SWE	SVK	TUR	USA
A) Communications services	90-02	92-02	91-98	80-02	97-02	92-02	81-02	98-02	94-00	85-02	92-02	94-99		87-01
B) Financial intermediation[3]	01	85-02	91-02	92-02		95-02	81-02	92-02	94-02	85-02	93-02	94-01	NO	87-01
C) Computer and information services	96-02	92-02				95-02	81-02			95-99	93-02	96-99		
D) Other business services	90-02	85-02	91-02	80-02	88-02	92-02	81-02	92-02	92-02	85-02	93-02	94-01		87-01
1) Merchanting and other trade-related services		85-02		80-02		92-02	81-02	92-02	99-02	85-02	93-02	94-01		01
2) Operational leasing services				80-02		92-02	81-02			95-99	95-02			
a) Research and development						92-02	81-02			95-99		95-99	PROD	
E) Personal, cultural, and recreational services	95-02	85-02	91-02	97-02	94-02	95-02	81-02	92-02	94-02	93-02	93-02	96-01		86-01
Business sector services [4]		92-02		98-02		95-02	92-02	99-02	95-02	93-02	92-02	96-01		87-01

(Source : Calculus of the author from the joint OECD-Eurostat database of trade in services)

[1] ISO alphanumerical 3-code, on web site: http://unstats.un.org/unsd/methods/m49/m49alphaf.htm

[2] Belgium-Luxembourg Economic Union

[3] Insurance services and financial services

[4] Transportation, travel, communication services, construction services, insurance services, financial services, computer and information services, royalties and license fees and other business services

Table 7 : Share of services in value added and in trade in goods and services, 2002

COUNTRY	Share of services in VA	Share of services in exports of goods and services	Share of services in imports of goods and services	Degree of openness (C+D) / (2.VAB)
Austria[b]	67.6 %	32.3 %	32.9 %	27.6 %
Australia[a,b]	78.4 %	21.6 %	20.4 %	12.3 %
Belgium-Luxembourg	74.0 %	19.7 %	18.4 %	26.3 %
Canada[a,b]	65.6 %	12.3 %	15.8 %	9.3 %
Czech Republic	59.0 %	15.4 %	13.5 %	16.5 %
Denmark	72.2 %	32.8 %	34.7 %	23.6 %
Finland	68.1 %	12.6 %	20.6 %	50.5 %
France	72.9 %	22.0 %	18.8 %	8.0 %
Germany	70.0 %	14.7 %	23.6 %	9.9 %
Greece	70.8 %	66.9 %	23.8 %	17.4 %
Hungary	66.1 %	18.3 %	16.3 %	19.6 %
Iceland	67.0 %	33.9 %	35.1 %	22.2 %
Ireland	55.7 %	24.7 %	44.1 %	56.2 %
Italy	70.3 %	19.1 %	21.1 %	7.9 %
Japan	68.6 %	14.3 %	26.3 %	3.1 %
Korea	57.5 %	14.8 %	19.4 %	11.5 %
Mexico	70.1 %	7.3 %	9.5 %	3.6 %
Netherlands	72.6 %	19.3 %	21.0 %	20.0 %
New Zealand[a,b]	66.6 %	26.1 %	25.3 %	13.0 %
Norway	61.0 %	24.3 %	31.7 %	17.0 %
Poland	66.4 %	17.7 %	14.5 %	8.8 %
Portugal	69.1 %	26.6 %	14.7 %	10.9 %
Slovakia	64.6 %	16.2 %	12.4 %	17.9 %
Spain	68.3 %	33.2 %	19.2 %	11.8 %
Sweden	70.6 %	22.6 %	26.5 %	15.5 %
Swizerland	71.7 %	24.2 %	14.6 %	11.1 %
Turkey	n.a.	26.1 %	11.3 %	n.a.
United Kingdom	73.1 %	31.7 %	23.5 %	11.1 %
United-States[a]	77.3 %	29.6 %	16.3 %	3.3 %
OCDE	**74.2 %**	**21.8 %**	**21.2 %**	

Source : Joint OECD-Eurostat database of international trade in services, calculs of the author

n. a. : non available

[a] Share of services in VA in 2001, last year available

[b] Degree of openness in services (VA) in 2001, last year available

[c] Share of services in VA in 1999, last year available

Table 8 : Share of services in production and in trade in goods and services, 2002

COUNTRY	Share of services in production	Share of services in exports of goods and services	Share of services in imports of goods and services	Degree of openness (C+D)/(2.PROD)
Austria	57.9 %	32.3 %	32.9 %	16.6 %
Australia	n.a.	21.6 %	20.4 %	n.a.
Belgium-Luxembourg	61.3 %	19.7 %	18.4 %	13.7 %
Canada[a,c]	54.7 %	12.3 %	15.8 %	5.7 %
Czech Republic	43.4 %	15.4 %	13.5 %	8.2 %
Denmark	63.4 %	32.8 %	34.7 %	13.9 %
Finland	51.4 %	12.6 %	20.6 %	5.8 %
France	58.8 %	22.0 %	18.8 %	5.2 %
Germany	56.6 %	14.7 %	23.6 %	6.5 %
Greece	61.2 %	66.9 %	23.8 %	12.2 %
Hungary	47.5 %	18.3 %	16.3 %	11.5 %
Iceland	59.3 %	33.9 %	35.1 %	11.7 %
Ireland	n.a.	24.7 %	44.1 %	n.a.
Italy	57.8 %	19.1 %	21.1 %	4.8 %
Japan	56.6 %	14.3 %	26.3 %	2.1 %
Korea	40.7 %	14.8 %	19.4 %	6.7 %
Mexico	54.5 %	7.3 %	9.5 %	2.7 %
Netherlands	59.7 %	19.3 %	21.0 %	12.2 %
New Zealand[a,c]	55.8 %	26.1 %	25.3 %	7.1 %
Norway	58.2 %	24.3 %	31.7 %	9.6 %
Poland	52.9 %	17.7 %	14.5 %	4.9 %
Portugal	55.0 %	26.6 %	14.7 %	6.6 %
Slovakia[a,c]	45.9 %	16.2 %	12.4 %	9.9 %
Spain[b,d]	51.5 %	33.2 %	19.2 %	8.0 %
Sweden	59.6 %	22.6 %	26.5 %	8.9 %
Swizerland	61.3 %	24.2 %	14.6 %	7.0 %
Turkey	n.a.	26.1 %	11.3 %	n.a.
United Kingdom[a,c]	66.7 %	31.7 %	23.5 %	5.9 %
United-States[a;c]	67.3 %	29.6 %	16.3 %	2.2%
OCDE	**62.5%**	**21.8 %**	**21.2 %**	

Source : Joint OECD-Eurostat database of international trade in services, calculs of the author

n. a. : non available

[a] Share of services in VA in 2001, last year available

[b] Share of services in VA in 2000, last year available

[c] Degree of openness in services (VA) in 2001, last year available

d Degree of openness in services (VA) in 2000, last year available

Table 9: Revealed comparative advantages, aggregates (average 2000-2002)

Countries	Goods	Transportation	Travel	Other services
Australia	-13.3	-48.2	76.2	-14.8
Austria	-45.5	29.6	25.3	-9.4
Belgium-Luxembourg	-47.4	12.2	-45.9	81.1
Canada	87.4	-26.3	24.3	-36.8
Czech Republic	-54.5	30.4	64.2	-40.1
Denmark	32.8	51.2	-100.0	16.0
Finland	94.6	-35.4	-20.2	-39.0
France	-88.4	-1.4	70.9	18.9
Germany	91.7	-10.5	-56.1	-25.2
Greece	-96.1	39.3	54.7	2,0
Hungary	-58.6	-10.5	94.9	-25.8
Iceland	-7.6	54.3	-55.4	8.7
Ireland	67.0	-3.6		-63.4
Italy	23.9	-33.0	75.7	-66.6
Japan	96.9	-20.6	-47.7	-28.6
Korea	67.3	20.8	-20.9	-67.3
Mexico	44.6	-8.8	45.2	-81.0
Netherlands	47.5	35.4	-53.7	-29.2
New-Zealand	12.5	-30.5	76.3	-58.3
Norway	73.1	23.9	-63.8	-33.1
Poland	-63.0	40.2	55.4	-32.6
Portugal	-92.3	0.6	88.8	2.9
Slovakia	-66.7	64.5	29.9	-27.7
Spain	-88.0	1.2	92.3	-5.5
Sweden	67.9	12.8	-63.3	-17.3
Switzerland	-97.9	4.4	3.7	89.8
Turkey	-88.0	7.5	59.3	21.1
United Kingdom	-60.2	-7.4	-31.3	99.0
United States	-99.6	1.9	31.7	66.0

(Source: Joint OECD-Eurostat database of trade in services, calculus of the author)

Table 10: Revealed comparative advantages, detail (average 2000-2002)

Country	Communications services	Construction services	Insurance services	Financial services	Computer and information services	Royalties and license fees	Other business services	Personal, cultural and recreationals services	Government services
Australia	-6.0	1.2	-2.3	5.8	0.9	-18.3	-0.3	1.4	2.7
Austria	1.8	3.6	-5.8	1.5	-6.2	-39.2	29.4	-0.0	5.6
Belgium-Luxembourg	9.4	3.6	1.4	51.8	3.7	-3.6	6.9	-3.1	11.1
Canada	-0.8	0.8	-11.5	-7.2	9.1	-19.7	-7.4	-2.6	2.7
Czech Republic	1.6	-0.2	-3.9	-6.6	0.8	-2.1	-30.8	1.2	-0.1
Denmark							16,0		
Finland	-3.4	4.1	-2.3		-1.9	-1.3	-31.4	-1.2	-1.5
France	1.1	7.8	2.1	-2.7	0.1	4.1	12.4	-4.0	-2.0
Germany	-2.9	-1.5	2.6	0.7	-2.3	-3.7	-18.4	-4.5	4.9
Greece	0.0	0.5	-0.4	0.3	-0.2	-1.3	4.1	0.7	-1.6
Hungary	0.4	0.8	-4.9	-1.7	1.2	-5.0	-19.0	2.6	-0.2
Iceland	-3.5	-4.7	-1.6	-1.9	10.7	-17.1	-2.0	28.8	
Ireland	1.1	-0.1	-1.0	1.6	29.0	-38.6	-56.7	0.8	0.5
Italy	-8.9	-1.1	-3.0	-0.8	-4.5	-5.9	-31.6	-3.8	-6.9
Japan	-0.7	1.4	-5.2	1.7	-2.6	-3.2	-16.9	-2.1	-0.9
Korea	-3.7	0.6	-3.1	4.3	-0.9	-26.3	-44.0	-0.6	5.2
Mexico	8.3	-64.7	-7.6	-6.2	-6.9		1.8	-5.8	
Netherlands	-0.9	15.1	-4.7	-3.9	-2.6	-6.4	-23.6	-0.9	-1.3
New-Zealand	0.1	0.7	-7.4	-1.5	-1.6	-23.0	-31.0	6.2	-0.9
Norway	0.0	0.5	-5.3	1.2	-3.6	-5.0	-18.4	-1.6	-0.9
Poland	-1.4	4.4	-2.2	-3.4	-4.1	-12.4	-9.2	-1.7	-2.6
Portugal	1.5	2.9	-0.5	0.5	-1.3	-4.2	5.6	-1.2	-0.5
Slovakia	2.8	-2.1	-1.2	-3.5	0.1	-3.4	-21.0	2.3	-0.5
Spain	-0.2	1.8	-0.3	1.2	3.0	-4.3	-4.8	-2.5	0.6
Sweden	-1.8	3.8	2.3	-0.7	4.6	6.2	-34.0	0.3	2.0
Switzerland	-1.5		11.4	57.5			12.0	-0.5	11.1
Turkey	-0.8	7.5	-2.8	-1.8	-1.2	14.7	9.8	-3.7	-0.7
United Kingdom	0.5	0.2	11.4	33.2	6.2	4.7	39.9	2.2	-1.0
United States	0.4	0.3	5.6	8.4	2.6	21.5	20.1	4.7	2.7

(Source: Joint OECD-Eurostat database of trade in services, calculus of the author)

Table 11: Revealed comparative advantages, commercial services only (average 2000-2002)

Countries	Transportation	Travel	Communications services	Construction services	Insurance services	Financial services	Computer and information services	Royalties and license fees	Other business services	Personnal, cultural and recreational services	Other services n.i.e.
Australia	-60.8	84.9	-7.7	1.4	-3.1	6.6	0.7	-22.1	-1.4	1.5	
Austria	33.7	25.2	1.8	4.3	-2.8	1.1	-2.4	-14.3	33.7	0.1	-80.4
Belgium-Luxembourg	7.5	-81.0	12.4	4.4	1.0	66.8	3.6	-6.6	-2.5	-5.6	
Canada	-25.0	4.1	6.9	3.3	-17.1	-13.7	38.5	-41.9	42.5	2.4	
Czech Republic	29.3	66.8	1.2	-2.3	-6.2	-13.1	-0.2	-4.0	-71.3	-0.2	
Denmark	77.2	-73.9							22.8		-26.1
Finland	-43.8	8.1	0.2	34.9	-10.2		13.7	31.4	-39.5	-4.2	14.1
France	-49.7	80.2	-2.1	9.8	3.5	-8.8	-2.2	1.8	-20.0	-12.6	
Germany	32.1	-86.5	-3.1	7.0	14.2	12.5	6.4	-0.1	27.1	-9.6	
Greece	-4.3	87.7	-14.3	-9.0	-13.1	-1.4	-7.8	-16.7	-16.5	-4.7	
Hungary	-22.9	98.6	-0.6	-0.2	-7.3	-4.8	-0.4	-9.9	-50.9	-1.6	
Iceland	84.2	-65.0	-3.8	-6.0	-1.8	-2.5	14.6	-17.3	-2.4		
Ireland	1.1		5.1	-0.1	6.7	10.0	67.7	-44.6	-54.8	1.8	7.1
Italy	-36.3	99.4	-10.5	1.0	-3.1	-0.8	-5.3		-6.9	-31.3	-4.2
Japan	30.2	-84.5	0.9	17.5	-10.7	11.8	-1.2	23.6	16.1	-3.7	
Korea	83.6	-8.4	-4.0	1.3	-4.6	8.8	-1.3	-36.4	-40.9	-0.3	2.2
Mexico	-5.9	83.9	12.7		-71.1	-9.0		-7.1	-6.9	3.4	
Netherlands	73.9	-67.8	0.8	25.3	-6.5	-4.6	-2.4	-6.7	-11.5	-0.6	-0.0
New-Zealand	-29.9	91.0	0.6	0.8	-8.1	-1.6	-1.5	-25.4	-33.3	7.3	
Norway	89.0	-75.8	1.7	1.1	-5.3	3.3	-2.7	-6.0	-4.2	-1.2	
Poland	45.0	51.0	-6.2	3.0	-7.3	-9.0	-9.6	-26.6	-35.9	-4.4	
Portugal	-50.7	97.0	-2.0	3.0	-3.6	-4.0	-6.5	-14.0	-11.2	-8.0	
Slovakia	68.3	27.1	2.5	-7.5	-2.9	-8.9	-3.2	-7.7	-66.7	1.3	-9.8
Spain	-27.3	98.6	-3.2	1.4	-4.0	-2.2	-0.9	-11.2	-43.5	-7.8	0.0
Sweden	47.2	-84.1	0.4	9.5	6.5	2.0	14.5	17.7	-14.9	1.0	
Switzerland	-22.4	-53.7	-10.7		15.2	83.1			-10.0	-1.4	
Turkey	-43.3	59.0	-3.8	12.6	-13.8	-18.4		-5.6	16.4	1.2	-4.1
United Kingdom	-28.1	-70.3	-1.6	0.2	13.9	38.4	6.6	0.8	36.5	1.8	1.7
United States	-90.1	6.1	-6.6	0.8	13.3	11.3	2.0	43.9	6.6	15.3	-7.0

(Source: Joint OECD-Eurostat database of trade in services, calculus of the author)